

Is it the smallest the best?

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No, it isn't

Thank you for your attention

I'm sorry for you
It's a joke...

How can we compare different hydro options?

At constant energy produced?

At constant water resource and head available (i.e. at the same site)?

At constant specific environmental impact (per kWh or kW)?

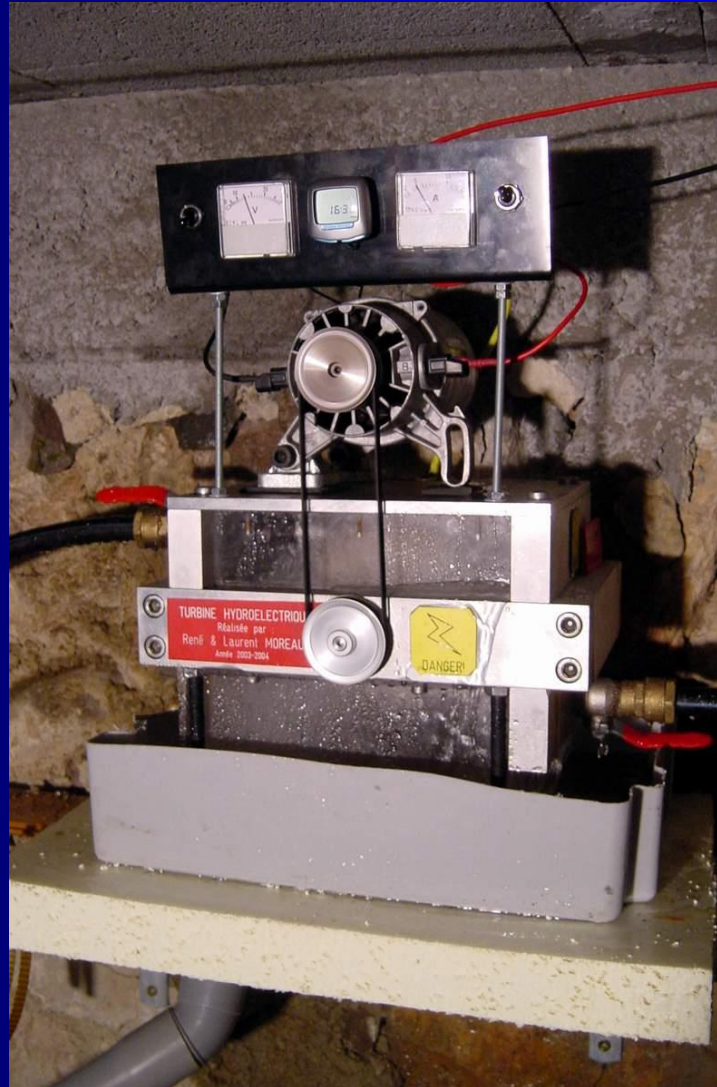
At constant energy payback ratio?

At constant specific NPV?

A small hydro plant (6,7 MW)

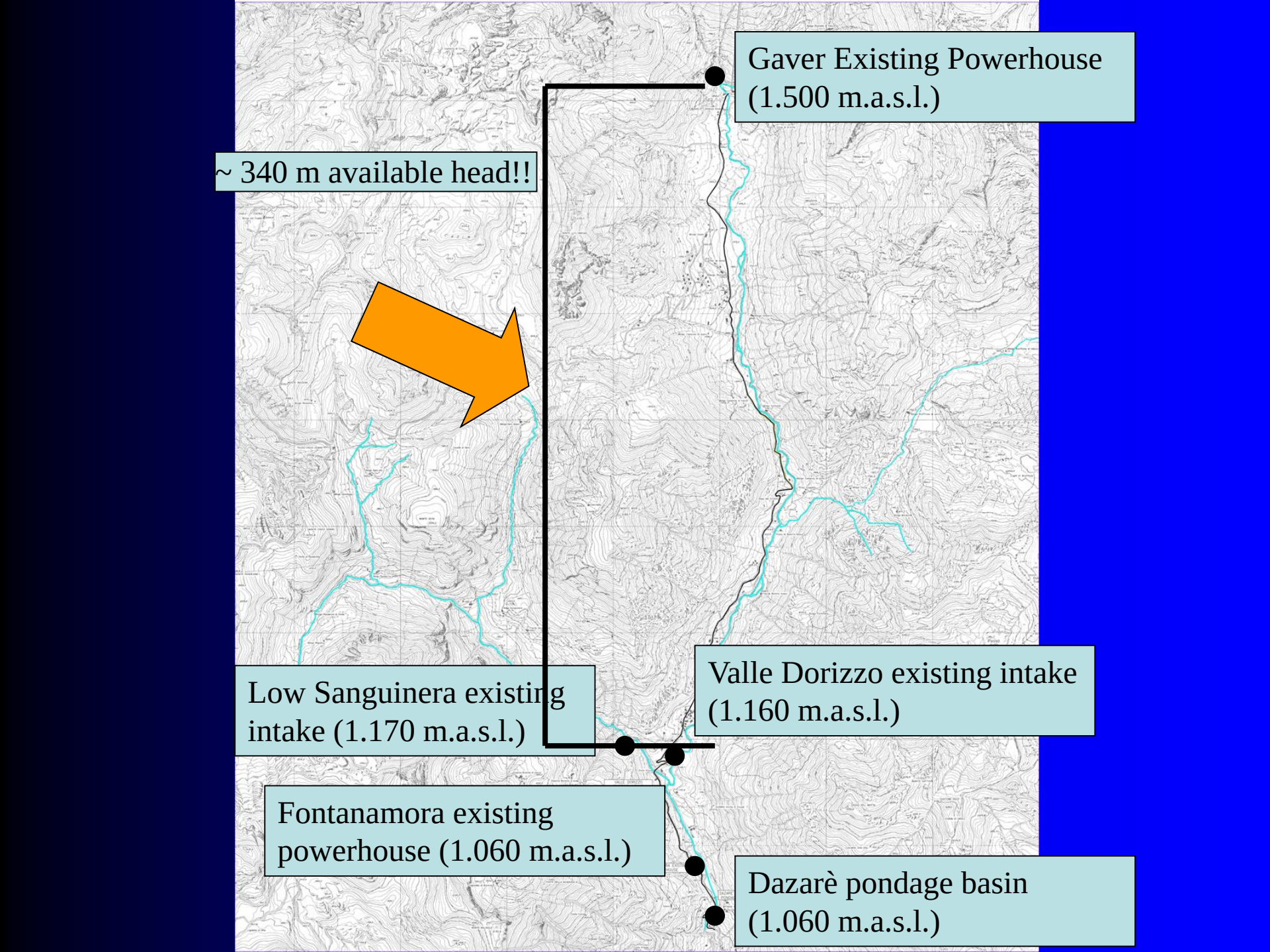


Another small hydro plant (600 W)



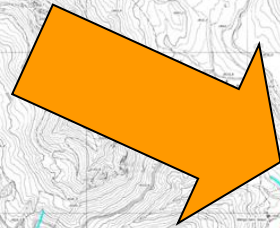
A not so small hydro plant





Gaver Existing Powerhouse
(1.500 m.a.s.l.)

~ 340 m available head!!



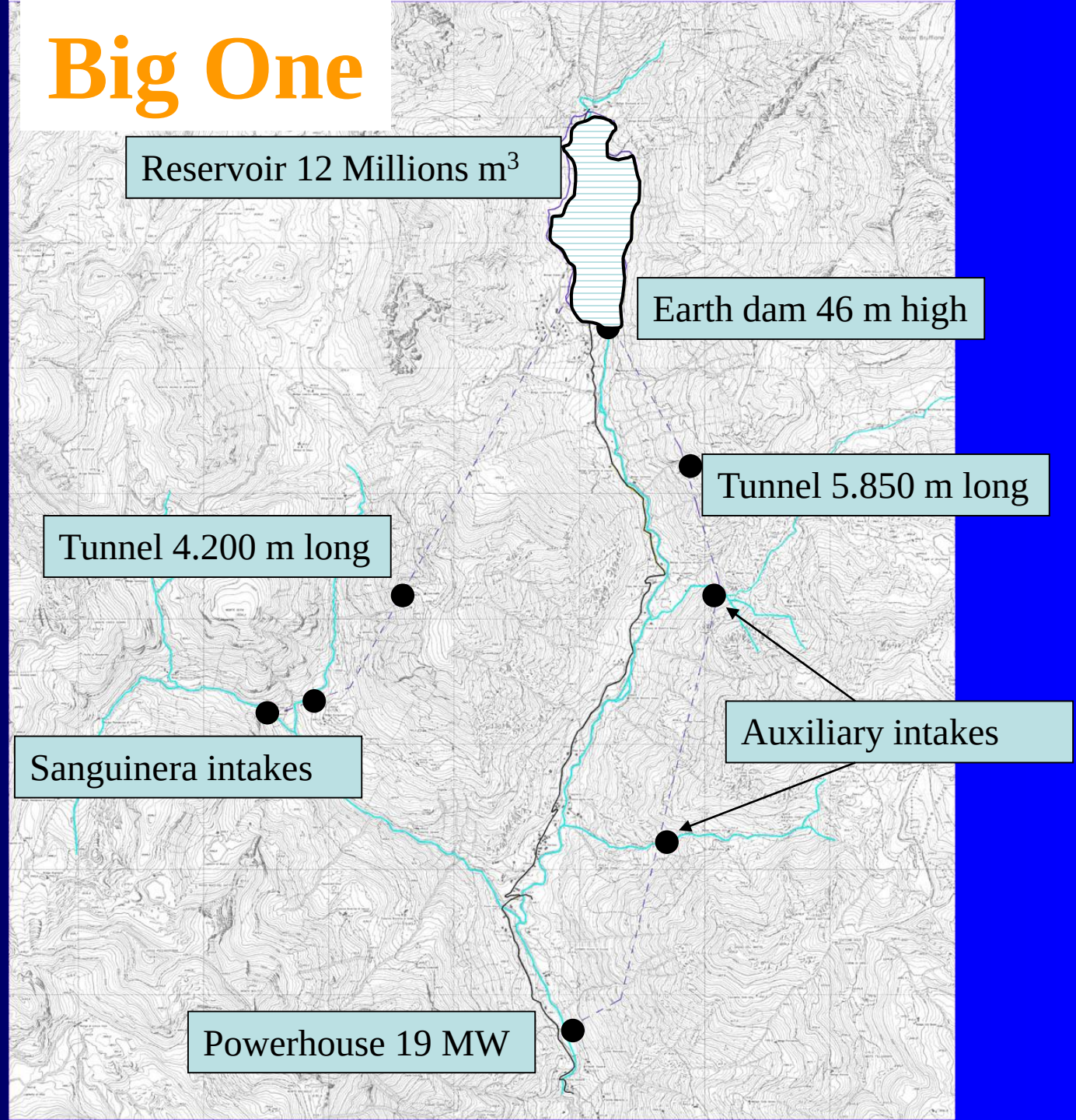
Low Sanguinera existing
intake (1.170 m.a.s.l.)

Valle Dorizzo existing intake
(1.160 m.a.s.l.)

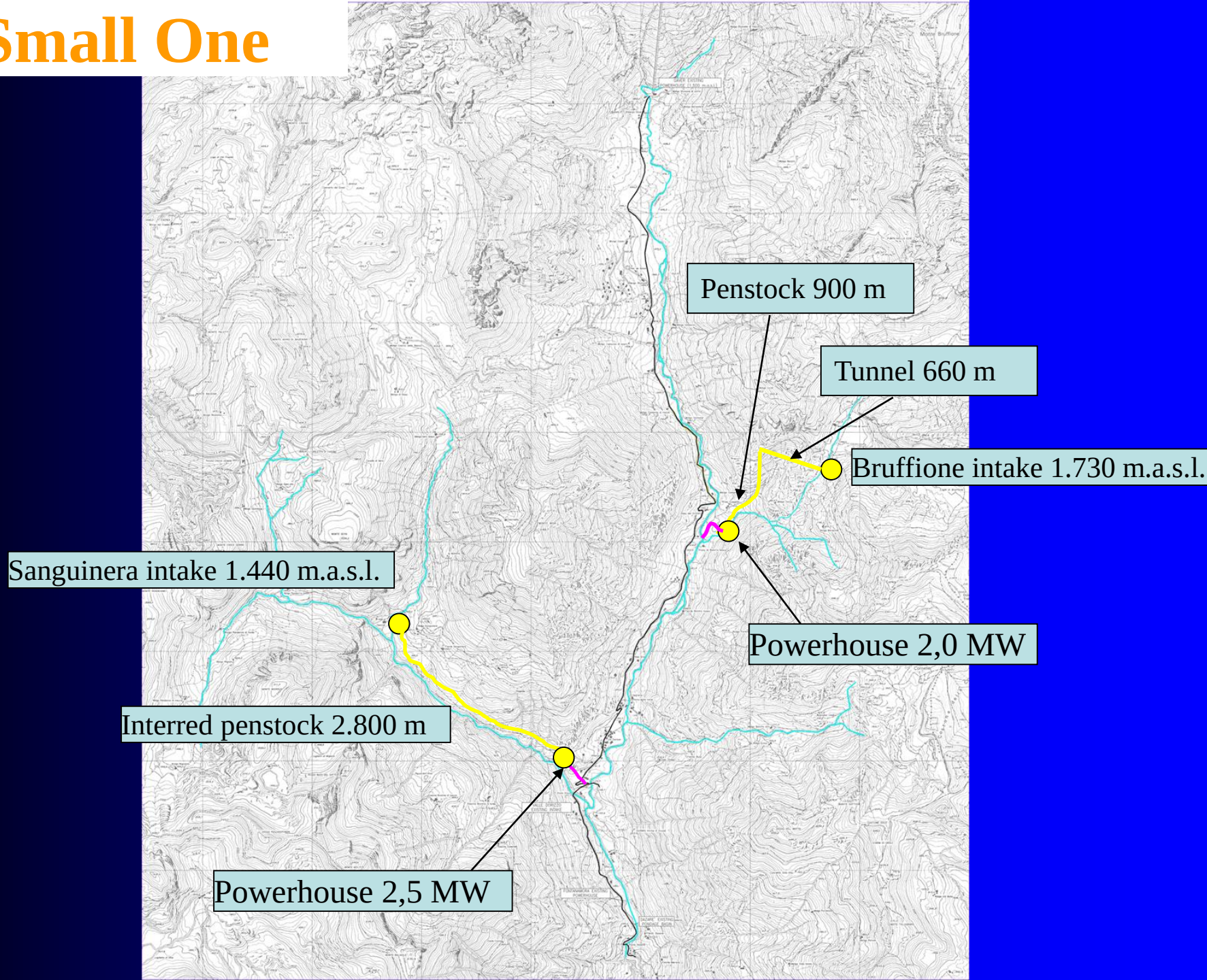
Fontanamora existing
powerhouse (1.060 m.a.s.l.)

Dazarè pondage basin
(1.060 m.a.s.l.)

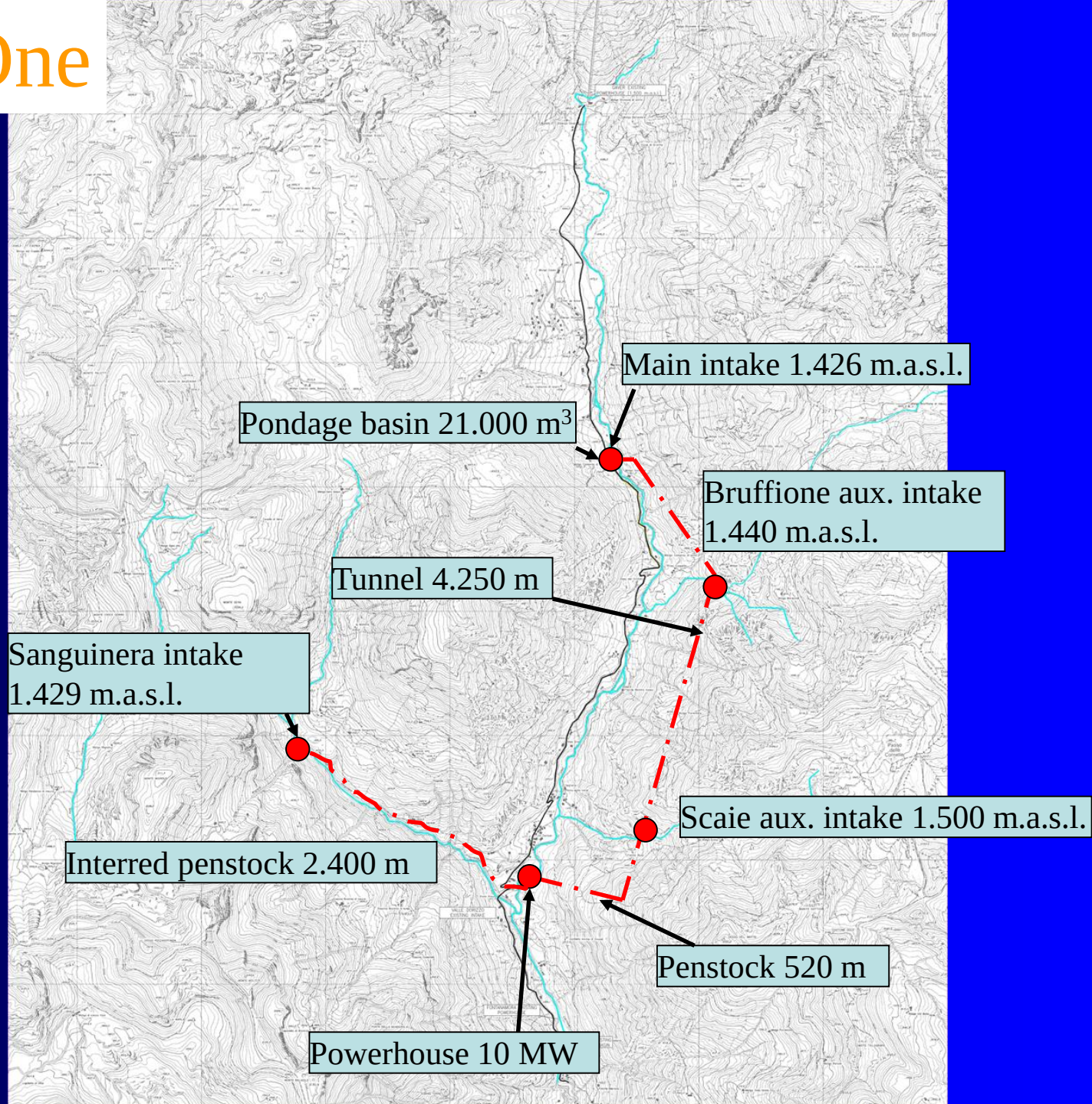
Big One



Small One



Medium One



EVALUATION PARAMETERS AND WEIGHTS

Valle Dorizzo

Criteria and Weights

Criteria	Measure	Weight
C Dam_Height	m	9,36
C Volume	m3	4,25
B Energy	GWh/year	20,31
C Land_Used	m2	14,21
C Depleted_Reach	km	13,20
C Access_roads	m	4,76
B Multipurpose	%	19,01
B Strategic_value	%	10,68
C Lost_views	nr	4,22

Projects and Impacts

BIG	MEDIUM	SMALL	ZERO
46,00	1,00	1,00	0,00
12.000.000	21.000	0	0
56,00	29,80	12,95	0,00
650.000	0	0	0
10,20	7,91	4,00	0,00
865	80	585	0
0,00	44,00	0,00	0,00
100,00	19,00	0,00	0,00
3,00	2,00	3,00	0,00

Groups : Local :50,00 Global :50,00

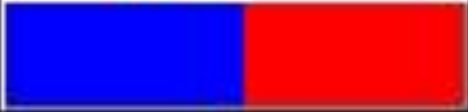
Selected Project : ZERO

Normalization used : Min_Max

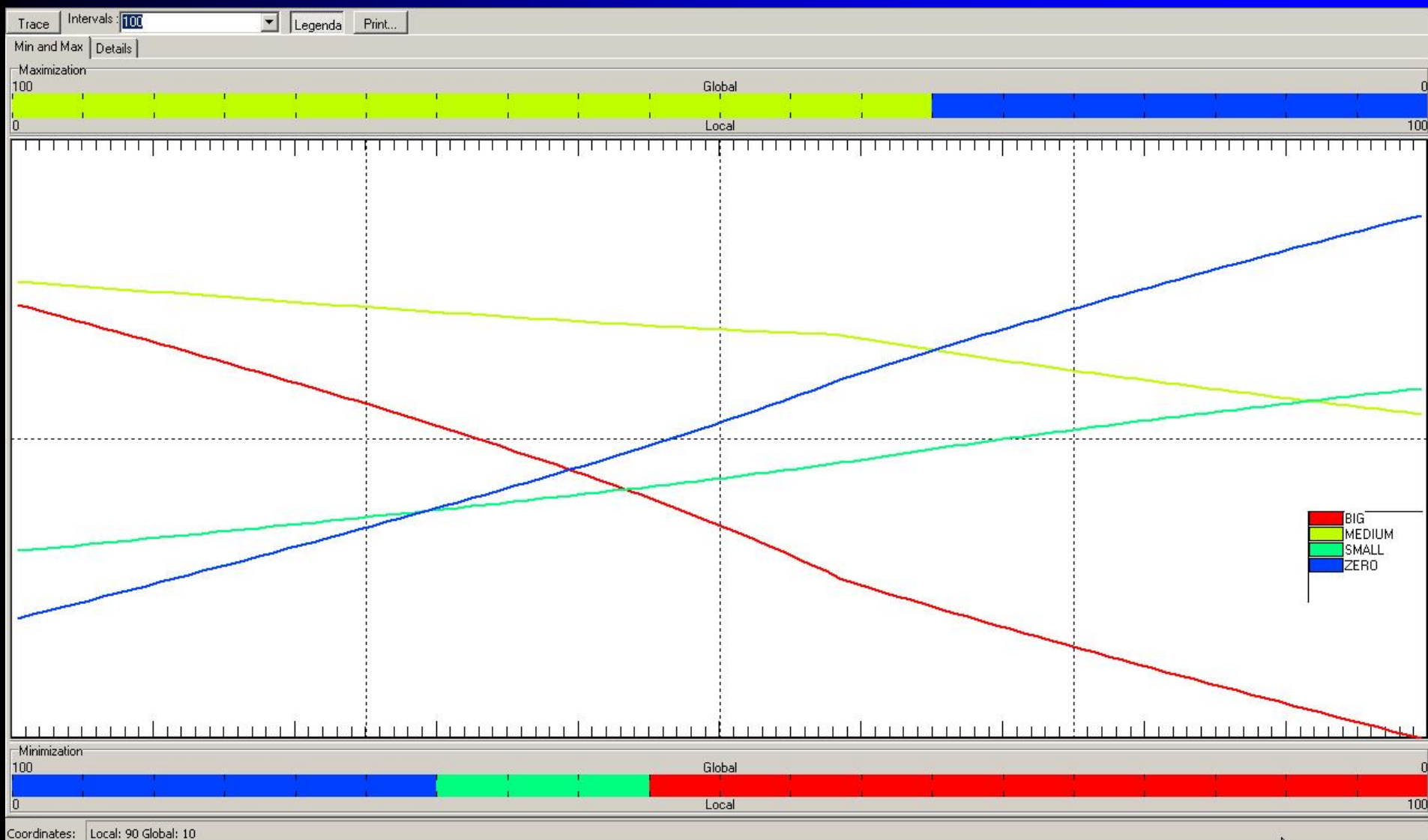
Global scale parameters

Local scale parameters

EVALUATION GLOBAL INDEX

Indexes		
		Syntetic
BIG		-1,1902
MEDIUM		1,5116
SMALL		-0,5451
ZERO		0,2237

EVALUATION SENSITIVITY ANALYSIS



CONCLUSIONS

- “the smallest the plant is not necessarily the best the plant is” .
- For a given water resource available, it's most likely to be a better choice than the smallest plant, a big plant thanks to the global benefits mainly resulting from a higher energy value (not only in terms of economics, but also of capability to meet peak electricity demand, etc.);
- the environmental sustainability of different hydro options must be compared at least at constant energy produced values: many small plants producing the same energy of a big one can have a higher impact;
- multi-purpose use of water is essential to get a better integration on environment;
- scale factors can affect negatively and heavily the smallest initiatives, because some impacts are independent from the size of the plant (e.g. at constant length of depleted reach, many small plants along a river stretch, have with reference to land required for powerhouses and appurtenances, a higher impact of a bigger one);
- the sustainability of a plant is not inversely proportional to the size, but an intermediate optimum size exists optimising the benefits of both smaller and bigger plants.



THIS IS THE END
OUR ONLY FRIEND

